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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

1. Claims 1 through 15 originally presented for examination 11 August 2006. Claims 1 through 15 amended by preliminary amendment received 11 August 2006. Claims 1 through 15 are pending in this application.

Response to Arguments

2. Applicant's arguments with regard to newly amended clarifications of independent claims are persuasive. According to what appears to be a common definition in the art, a semiconductor device of the claimed invention would be possessed of a height, a width, and a length. The height corresponds to the distance from the substrate of the device extending through the active layer to the top of the device. The width and length correspond to directions mutually orthogonal and each normal to the direction of the height, the length corresponding to the dimension of the device which is longer. Light is emitted along a direction corresponding to the length of the device. The longitudinal axis is defined as the direction corresponding to the length of the device by how it is described and in light of the preceding discussion.

3. It is by this definition that examiner will determine the weight of the limitations drawn to the longitudinal axis and directions corresponding thereto. Examiner notes that direction of emission in Fenner (US Patent 3,482,189) appears normal to the longitudinal axis, rather than parallel and the direction of emission in Mattori et al. (Mattori, US Patent 6,081,539) appears parallel to the longitudinal axis. Fenner

explicitly discloses drawings of the semiconductor device utilized, however the device disclosed in Mattori provides no indication as to the dimensions of the actual semiconductor device, but rather provides what may be interpreted as a block diagram. As such, one who only attended to the disclosures of Fenner and Mattori would likely come to the conclusion to orient the output of the semiconductor device to issue forth from a facet or facets normal to the longitudinal axis. It is stated by applicant, and examiner agrees, that the legal understandings of obviousness provided in the case of *In re Japikse*, 86 USPQ 70, at least in so far as examiner had previously applied such understandings, are not applicable to the differences between these examples of the prior art and the claimed invention.

4. However, Fenner does not appear to provide any particular reasoning as to why the semiconductor device designed so desirable output issues forth normal to the longitudinal axis. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it is well known and pervasive in the art to fabricate semiconductor devices wherein the direction of emission is along the longitudinal axis. Under this knowledge, the examples of the

prior art may be modified so as to provide the teachings for which they were cited to a semiconductor device where emission is along the longitudinal axis.

5. Regarding newly amended limitation "The mirror unit and the exit window being arranged on opposite ends of the support unit along and substantially traverse to the longitudinal axis", light appears to propagate across diffraction grating (21) and be deflected to terminal mirror (22) in Fig. 2 of Mattori. Mattori utilizes the translation section (24) so as to translate elements 21 and 22 along the direction of propagation so as to extend or diminish the cavity length. To the end of establishing disclosure of the a terminal mirror and exit window, this claim is disclosed, however the terminal mirror utilized in Mattori is not transverse to the direction of propagation. The invention of Mattori utilizes a diffractive grating structure so as to filter the light, and this element deflects light from the initial direction of propagation. One of ordinary skill in the art would readily appreciate that, should a filter mechanism that does not deflect the direction of propagation be used, the terminal mirror may most advantageously be located traverse to the axis of emission. One of ordinary skill in the art would also appreciate that, where the direction of propagation is deflected once, it may again be deflected so as to require the terminal mirror to be traverse to the axis of emission. To that end, it appears to be an obvious matter of design choice that the claimed elements are traverse to the axis of emission, since applicant has not disclosed any that this solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the difference.

6. Accordingly, all claims are addressed as follows:

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1 through 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Fenner (US Patent 3,482,189) in view of Mattori et al. (Mattori, US Patent 6,081,539).

9. ***Regarding claim 1***, Fenner discloses, "Including a light source unit" (Fig. 1, pt. 13). "A mirror unit" (col. 2, lines 69-72). "A support unit" (col. 7, lines 4-14). "An exit window having an opening" (col. 3, lines 12-19). "A pressure-generating element" (col. 7, lines 4-14). "The light source unit and the pressure-generating element being contained in the support unit" (col. 7, lines 4-14). "A force being generated with the pressure-generating element" (col. 7, lines 4-14). "Which force acts on the light source unit" (col. 7, lines 4-14). Fenner does not disclose, "The mirror unit and the exit window being arranged on opposite ends of the support unit along and substantially traverse to the longitudinal axis." "Wherein at least one of the mirror unit and the exit window is at least one of displaceable along the longitudinal axis relative to the support unit and tiltable relative to the longitudinal axis by at least one displacement element in dependence on the force generated by the pressure-generating element on the light source unit." Mattori discloses, "The mirror unit and the exit window being arranged on opposite ends of the support unit along and substantially traverse to the longitudinal

axis" (Fig. 2, pts. 3 and 22). "Wherein at least one of the mirror unit and the exit window is at least one of displaceable along the longitudinal axis relative to the support unit and tiltable relative to the longitudinal axis by at least one displacement element in dependence on the force generated by the pressure-generating element on the light source unit" (col. 8, lines 27-32). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Fenner with the teachings of Mattori. Cavity length tuning as taught by Mattori would enhance the teachings of Fenner by allowing for multiple tuning means.

10. The combination of Fenner and Mattori does not disclose, "Which exhibits a longitudinal axis running substantially parallel to the generated light beams." It would have been obvious to one of ordinary skill in the art to fabricate a laser diode device such that the direction of emission is along the longitudinal axis, since it was known in the art at the time of invention that a semiconductor laser device may be fabricated so as to emit along the longitudinal axis and there does not appear to be any particular reason as to why the cited prior art does not do so.

11. **Regarding claim 2**, Fenner discloses, "Wherein a force on the light source unit can be generated from a plurality of sides with the pressure-generating element" (Fig. 5, pts. 51 and 52). "The force acting substantially perpendicularly to the longitudinal axis" (Fig. 5, pts. 51 and 52).

12. **Regarding claim 3**, Fenner discloses, "Wherein a force, uniform all around, can be generated on the light source unit with the pressure-generating element" (col. 3, lines 1-11).

13. **Regarding claim 4**, the combination of Fenner and Mattori does not disclose, "Wherein the pressure-generating element is of piezoelement type based on a material selected from the group consisting of sodium persulfate, sodium hydroxide, copper sulfate." It would have been obvious to one of ordinary skill in the art to utilize specific piezoelement types, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

14. **Regarding claim 5**, the combination of Fenner and Mattori does not disclose, "Wherein the piezoelement is a tourmaline crystal that has an electrically conductive film selected from the group consisting of silver and aluminum for contacting on the sides facing toward and away from the light source unit." It would have been obvious to one of ordinary skill in the art to utilize specific piezoelement types, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

15. **Regarding claim 6**, Fenner does not disclose, "Wherein the exit window is selected from the group consisting of a semitransparent window and a Brewster window." Mattori discloses, "Wherein the exit window is selected from the group consisting of a semitransparent window and a Brewster window" (Fig. 2, pt. 3). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Fenner with the teachings of Mattori.

16. **Regarding claim 7**, the combination of Fenner and Mattori does not disclose, "Wherein the exit window and the mirror unit are displaceable in such fashion that the light source unit is always arranged centrally between the exit window and the mirror unit." It would have been obvious to one having ordinary skill in the art at the time of invention to design both window and mirror to be displaceable, since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

17. **Regarding claim 8**, Fenner discloses, "Wherein the displacement element comprises at least one piezoelement" (col. 7, lines 4-14).

18. **Regarding claim 9**, the combination of Fenner and Mattori does not disclose, "An insulation layer between the mirror unit and the support unit and between the exit window and the support unit." It would have been obvious to one of ordinary skill in the art at the time of invention to include an insulation layer since it was known in the art

that elements that may be electrically or thermally conductive should be insulated when placed in positions that such conduction would be disadvantageous.

19. **Regarding claim 10**, Fenner discloses, "Wherein the light source unit is a laser diode unit of the semiconductor laser type" (col. 2, lines 52-56).

20. **Regarding claim 11**, Fenner discloses, "Including a light source unit" (Fig. 1, pt. 13). "A mirror unit" (col. 2, lines 69-72). "A support unit" (col. 7, lines 4-14). "An exit window having an opening" (col. 3, lines 12-19). "A pressure-generating element" (col. 7, lines 4-14). "The light source unit and the pressure-generating element being contained in the support unit" (col. 7, lines 4-14). "A force acting on the light source unit being generated with the pressure-generating element" (col. 7, lines 4-14). Fenner does not disclose, "The mirror unit and the exit window being arranged at opposite ends of the support unit along and substantially transverse to the longitudinal axis." "The method comprising displacing at least one of the mirror unit and the exit window along the longitudinal axis relative to the support unit and tilting said at least one of said mirror unit and exit window relative to the longitudinal axis by at least one displacement element in dependence on the force generated by the pressure-generating element on the light source unit." Mattori discloses, "The mirror unit and the exit window being arranged at opposite ends of the support unit along and substantially transverse to the longitudinal axis" (Fig. 2, pts. 3 and 22). "The method comprising displacing at least one of the mirror unit and the exit window along the longitudinal axis relative to the

support unit and tilting said at least one of said mirror unit and exit window relative to the longitudinal axis by at least one displacement element in dependence on the force generated by the pressure-generating element on the light source unit" (col. 8, lines 27-32). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Fenner with the teachings of Mattori for the reasons given above regarding claim 1.

21. The combination of Fenner and Mattori does not disclose, "Which has a longitudinal axis running substantially parallel to the generated light beams." It would have been obvious to one of ordinary skill in the art to fabricate a laser diode device such that the direction of emission is along the longitudinal axis, since it was known in the art at the time of invention that a semiconductor laser device may be fabricated so as to emit along the longitudinal axis and there does not appear to be any particular reason as to why the cited prior art does not do so.

22. **Regarding claim 12**, Fenner discloses, "Including generating said force on the light source unit from a plurality of sides with the pressure-generating element" (Fig. 5, pts. 51 and 52). "The force acting substantially perpendicularly to the longitudinal axis" (Fig. 5, pts. 51 and 52).

23. **Regarding claim 13**, Fenner discloses, "Wherein said force generated on the light source unit is uniform all around" (col. 3, lines 1-11).

24. **Regarding claim 14**, the combination of Fenner and Mattori does not disclose, "Including displacing the exit window and the mirror unit in such fashion that the light source unit is always arranged centrally between the exit window and the mirror unit." It would have been obvious to one having ordinary skill in the art at the time of invention to design both window and mirror to be displaceable, since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

25. **Regarding claim 15**, Fenner does not disclose, "Including setting the spacing between the mirror unit and the exit window such that the distance of said spacing is exactly equal to, or a multiple of, half the wavelength of interest." Mattori discloses, "Including setting the spacing between the mirror unit and the exit window such that the distance of said spacing is exactly equal to, or a multiple of, half the wavelength of interest" (col. 2, lines 11-22). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Fenner with the teachings of Mattori.

Conclusion

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

27. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEAN HAGAN whose telephone number is (571)270-1242. The examiner can normally be reached on Monday-Friday 7:30 - 5:00.

29. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun O. Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2828

30. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. H./

Examiner, Art Unit 2828

/Minsun Harvey/

Supervisory Patent Examiner, Art Unit 2828